



charge in cfs			Manganese Concentration Coefficients		
	Intercept	coefficient		B	Intercept
			Low Flow November-March		
M34	-2.771	0.394	-2.28954	<u>0.38718</u>	A72 0.004 110.08249
CC48	1.752	0.130	6.77165	<u>0.10539</u>	M34 0.039 120.28045
A68	-11.131	0.498	-3.62869	<u>0.45153</u>	CC48 0.024 636.59640
					A68 0.025 37.87432

Discharge Relationships among the three gages

MONTH	J	F	M	A	M	J	J
Intercept	1	1	1	1	1	1	1
A 72	64	63	77	155	682	1196	624
M34	22	22	28	58	266	468	243
CC48	14	13	15	22	91	158	83
A68	25	25	31	66	329	585	300
Ground water	3	3	3	9	-3	-14	-2

1/(1+BQ) Discharge Representation

A 72	0.7962	0.7987	0.7645	0.6173	0.2682	0.1729	0.2860
M34	0.5327	0.5371	0.4823	0.3056	0.0880	0.0519	0.0955
CC48	0.7551	0.7565	0.7368	0.6548	0.3148	0.2090	0.3339
A68	0.6128	0.6171	0.5623	0.3771	0.1085	0.0640	0.1178

Date variables

sin	0.1552	0.6358	0.9276	0.9887	0.7862	0.3629	-0.1441
cos	0.9879	0.7719	0.3737	-0.1496	-0.6180	-0.9318	-0.9896
sin1	0.3066	0.9815	0.6932	-0.2959	-0.9717	-0.6763	0.2852
cos1	0.9518	0.1916	-0.7207	-0.9552	-0.2361	0.7366	0.9585
Consent	1	1	1	1	1	1	1

A72	Intercept	1	1	1	1	1	1
	BQ	0.7962	0.7987	0.7645	0.6173	0.2682	0.2860
	sin	0.1552	0.6358	0.9276	0.9887	0.7862	-0.1441
	cos	0.9879	0.7719	0.3737	-0.1496	-0.6180	-0.9896
	sin1	0.3066	0.9815	0.6932	-0.2959	-0.9717	-0.6763
	cos1	0.9518	0.1916	-0.7207	-0.9552	-0.2361	0.7366
	Consent						

A72 Concentration 1101 1293 1423 1280 691 328 295

M34	Intercept	1	1	1	1	1	1
	BQ	0.5327	0.5371	0.4823	0.3056	0.0880	0.0519
	sin	0.1552	0.6358	0.9276	0.9887	0.7862	-0.1441
	cos	0.9879	0.7719	0.3737	-0.1496	-0.6180	-0.9896
	sin1	0.3066	0.9815	0.6932	-0.2959	-0.9717	-0.6763
	cos1	0.9518	0.1916	-0.7207	-0.9552	-0.2361	0.7366
	Consent	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

M34 Concentration 510 536 508 369 177 105 115

CC 48	Intercept	1	1	1	1	1	1	1
	BQ	0.7551	0.7565	0.7368	0.6548	0.3148	0.2090	0.3339
	sin	0.1552	0.6358	0.9276	0.9887	0.7862	0.3629	-0.1441
	cos	0.9879	0.7719	0.3737	-0.1496	-0.6180	-0.9318	-0.9896
	sin1	0.3066	0.9815	0.6932	-0.2959	-0.9717	-0.6763	0.2852
	cos1	0.9518	0.1916	-0.7207	-0.9552	-0.2361	0.7366	0.9585
	Consent	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
CC 48 Concentration		1831	1810	1877	1802	933	451	534
A68	Intercept	1	1	1	1	1	1	1
	BQ	0.6128	0.6171	0.5623	0.3771	0.1085	0.0640	0.1178
	sin	0.1552	0.6358	0.9276	0.9887	0.7862	0.3629	-0.1441
	cos	0.9879	0.7719	0.3737	-0.1496	-0.6180	-0.9318	-0.9896
	sin1	0.3066	0.9815	0.6932	-0.2959	-0.9717	-0.6763	0.2852
	cos1	0.9518	0.1916	-0.7207	-0.9552	-0.2361	0.7366	0.9585
	Consent	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
A68 Concentration		1895	2270	2435	2069	1216	731	549
Concentration in Groundwater		0	0	0	0	0	0	0
Load in pounds per day								
	Sum	454	499	636	1068	2869	2957	1279
	A72	380	440	592	1071	2544	2120	994
	% Difference	0.19	0.13	0.07	0.00	0.13	0.40	0.29
	RPD	0.18	0.13	0.07	0.00	0.12	0.33	0.25

ganese Concentration Coefficients					
Bq	sin	cos	sin1	cos1	Consent
1300.01851	258.05023	32.88141	-22.83880	<u>-115.51468</u>	0.000
676.85542	28.85039	45.76225	2.36955	<u>-21.93733</u>	0
2418.14462	55.02265	133.79117	-163.86850	-115.75164	<u>-611.58877</u>
2357.47898	524.74014	10.67654	-7.02235	-157.22271	<u>472.32632</u>

A	S	O	N	D
1	1	1	1	1
268	187	142	92	70
103	71	53	33	25
37	26	20	16	14
122	82	60	38	28
6	8	9	4	3

0.4826	0.5721	0.6378	0.7310	0.7813
0.1997	0.2657	0.3255	0.4348	0.5082
0.5317	0.6145	0.6727	0.7167	0.7465
0.2464	0.3278	0.4016	0.5134	0.5884

-0.6271	-0.9360	-0.9878	-0.7716	-0.3573
-0.7789	-0.3521	0.1556	0.6361	0.9340
0.9769	0.6591	-0.3074	-0.9816	-0.6674
0.2135	-0.7521	-0.9516	-0.1908	0.7447
1	1	1	1	1

1	1	1	1	1
0.4826	0.5721	0.6378	0.7310	0.7813
-0.6271	-0.9360	-0.9878	-0.7716	-0.3573
-0.7789	-0.3521	0.1556	0.6361	0.9340
0.9769	0.6591	-0.3074	-0.9816	-0.6674
0.2135	-0.7521	-0.9516	-0.1908	0.7447

503 673 806 927 993

1	1	1	1	1
0.1997	0.2657	0.3255	0.4348	0.5082
-0.6271	-0.9360	-0.9878	-0.7716	-0.3573
-0.7789	-0.3521	0.1556	0.6361	0.9340
0.9769	0.6591	-0.3074	-0.9816	-0.6674
0.2135	-0.7521	-0.9516	-0.1908	0.7447
1.0000	1.0000	1.0000	1.0000	1.0000
199	275	339	423	479

1	1	1	1	1
0.5317	0.6145	0.6727	0.7167	0.7465
-0.6271	-0.9360	-0.9878	-0.7716	-0.3573
-0.7789	-0.3521	0.1556	0.6361	0.9340
0.9769	0.6591	-0.3074	-0.9816	-0.6674
0.2135	-0.7521	-0.9516	-0.1908	0.7447
1.0000	1.0000	1.0000	1.0000	1.0000
987	1391	1779	1984	1959

1	1	1	1	1
0.2464	0.3278	0.4016	0.5134	0.5884
-0.6271	-0.9360	-0.9878	-0.7716	-0.3573
-0.7789	-0.3521	0.1556	0.6361	0.9340
0.9769	0.6591	-0.3074	-0.9816	-0.6674
0.2135	-0.7521	-0.9516	-0.1908	0.7447
1.0000	1.0000	1.0000	1.0000	1.0000
713	902	1092	1359	1607

0	0	0	0	0
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777	701	644	531	457
728	679	618	460	376
0.07	0.03	0.04	0.15	0.22
0.07	0.03	0.04	0.14	0.19

A72			Prediction Equation Coefficients				
Chronic TVS at A72			Hardness AluminumCadmium				
	a2	b2					
Cd	-3.49	0.7852	B	0.006	1.000	0.006	
Cu	-1.7428	0.8545	Intercept	82.304	-26.540	1.020	
Mn	5.8743	0.3331	BQ	200.676	5610.562	1.466	
Zn	0.8669	0.8473	sin	16.936	158.116	0.599	
			cos	48.860	40.749	0.066	
			sin1	15.385	127.998	-0.265	
			cos1	-5.633	6.691	-0.292	
			Consent				
	Month	J	F	M	A	M	J
	Q	64	63	77	155	682	624
	Hardness	277	290	268	196	91	72
	Al ch	87	87	87	87	87	87
	Cd ch	2.5	2.6	2.5	1.9	1.1	0.9
	Cu ch	11	11	10	8	4	3
	Mn ch	2317	2352	2290	2064	1598	1482
	Zn ch	279	290	271	208	109	90

M 34		Prediction equation coefficients						
		Hardness	Aluminum	Cadmium	Copper	Iron	Zinc	
	B	0.013	1.00	0.021	0.123	0.06521	0.021	
	Intercept	60.05228	15.10361	0.91724	14.65129	77.70523	05.25873	
	BQ	05.02801	38.29032	0.60966	00.98354	70.29706	78.11589	
	sin	9.24827	69.03843	0.26911	14.16661	89.38888	88.77920	
	cos	32.30173	79.08681	0.20991	10.17487	38.04002	85.94018	
	sin1		435.43127	-0.12214	1.04278	86.24646	-17.99615	
	cos1		123.10453	-0.14689	-3.82920	-12.30367	-45.60154	
	consent		-265.10754		-10.75402	35.80515	-98.00378	
	MONTH	J	F	M	A	M	J	J
Avg monthly	Q	22	22	28	58	266	468	243
	Hardness	255	241	226	170	86	60	76
Chronic Stan	Al, ch	87	87	87	87	87	87	87
	Cd, ch	2.4	2.3	2.1	1.7	1.0	0.8	0.9
	Cu ch	20	19	18	14	8	6	7

Mn	2253	2212	2163	1969	1571	1389	1504
Zn ch	260	248	235	185	104	76	93

A68 Animas at Silverton

Prediction equation coefficients								
		Hardness		Cadmium	Copper	Manganese		Zinc
B		0.011	na	na	0.010	0.016		
Intercept		37.945	2.395	5.783	258.473	304.617		
BQ		165.600			1371.923	644.136		
sin			1.712	2.049	611.024	315.451		
cos			0.140	0.729	81.662	-18.603		
sin1			-0.250	-1.520	16.031	-33.783		
cos1			-1.185	-0.472	-263.628	-140.108		
May			-1.936	2.261	-258.699			
consent			-0.714	-1.828	411.428	-67.174		
Animas R	Month	J	F	M	A	M	J	J
	Q	25	25	31	66	329	585	300
	Hardness	168	168	161	134	74	60	76
	Cd, tvs	1.7	1.7	1.7	1.4	0.9	0.8	0.9
	Cu tvs	14	14	13	11	7	6	7
	Mn tvs	1959	1961	1934	1818	1491	1393	1509
	Zn tvs	182	183	177	151	91	77	94
ponic stand								

Reaction Equation Coefficients

Copper	Iron	Zinc			
0.100	0.048	0.014			
11.592	325.430	272.266			
-11.516	6156.248	697.432			
5.618	310.323	155.229			
5.955	262.025	37.490			
1.700	-72.066	-37.359			
-0.594	-177.065	-77.421			
-1.491					
A	S	O	N	D	
268	187	142	92	70	
124	158	182	215	248	
87	87	87	87	87	
1.3	1.6	1.8	2.1	2.3	
5	7	7	9	10	
1772	1920	2013	2129	2233	
141	173	195	225	255	

	Acute TVS at M34		Chronic TVS at M34	
	a2	b2	a3	b3
Cd	-3.828	1.128	-3.49	0.7852
Cu	-0.7703	0.9422	-1.7428	0.8545
Mn	4.4995	0.7893	5.8743	0.3331
Zn	0.8904	0.8473	0.8669	0.8473

A	S	O	N	D
103	71	53	33	25
126	151	192	217	253
87	87	87	87	87
1.4	1.6	1.9	2.1	2.3
11	13	16	17	20

1783	1892	2050	2136	2246
144	167	205	227	258

Chronic TVS at A68					
	a2	b2			
Cd	-3.49	0.7852			
Cu	-1.7428	0.8545			
Mn	5.8743	0.3331			
Zn	0.8669	0.8473			
	A	S	O	N	D
	122	82	60	38	28
	109	125	138	155	165
	1.2	1.4	1.5	1.6	1.7
	10	11	12	13	14
	1695	1777	1836	1908	1947
	126	142	155	171	180